

THE
Municipality of George Town,
PENANG,
STRAITS SETTLEMENTS.

B. of H. & T. D.
- 9 APR 1935
C. A. M. C.

HEALTH OFFICER'S

ANNUAL REPORT

FOR THE YEAR 1933.

PRICE 50 CENTS PER COPY.

OBTAINABLE FROM THE MUNICIPAL SECRETARY.

STATISTICAL SUMMARY.

Situation	...	...	...	...	...	Lat. 5° 24' N., Long. 100° 20' E.
Average Elevation above L.W.M.O.S.T.				...	...	Town area 12 feet 6 inches. Suburban area 25 feet 0 inch.
O. S. Tides rise and fall	...	...	...	...	...	9 feet 0 inch.
Rainfall 1933 (average of three readings within Municipal Limits)			...	...	...	113.96 inches.
Average annual rainfall for preceding 53 years (up to 1933) at the Prison				...	...	108.00 inches.
Rainfall for 1933 at the Prison			...	...	...	162.17 inches.
Mean Temperature 1933	...	...	...	...	...	82.0° F.
Maximum Temperature 1933	..	...	...	...	..	89.7° F.
Minimum Temperature 1933	...	...	...	...	...	74.2° F.
Total area of Penang Island			...	...	...	108 square miles.
Area within Municipal limits			...	...	...	9.4 sq. miles or 5,845 acres.
Estimated population (mid-year)			...	...	...	156,014.
Density of population	...	...	...	...	...	26.69 per acre.
Crude death rate	...	...	...	...	...	23.02 per mille.
Infant mortality	...	...	...	...	...	146
Birth rate	...	...	...	...	...	32.38 per mille.
Sterling equivalent	...	...	...	...	...	2s. 4d.

STAFF OF THE HEALTH DEPARTMENT ON 31ST DECEMBER, 1933.

W. H. Brodie ...	...	M.B., Ch. B., D.P.H.,			
		Health Officer,			
		Registrar of Births and Deaths,			
		Deputy Superintendent of Vaccination,			
		Registrar of Midwives,			
		Medical Superintendent of Infectious Diseases Hospital,			
		Medical Superintendent of Chinese Small-pox Hospital,			
(Vacant) ...	...	Deputy Health Officer.			
T. P. Khoo ...	...	M.B., B.S. (Hong Kong),			
		Deputy Registrar of Deaths.			
J. E. Miller ...	...	M.S.I.A., Cert. R.S.I.,			
		Chief Sanitary Inspector, joined the service 14th September, 1933.			
H. L. McCulloch ...	...	Sanitary Inspector,	do.	5th January,	1912.
R. J. Rangel ...	...	do.	do.	1st October,	1913.
Ow Leong Chye ...	...	do.	do.	1st July,	1921.
M. D'Souza ...	...	Sanitary Sub-Inspector,	do.	1st April,	1919.
John Loh ...	...	do.	do.	17th May,	1921.
E. V. Lessler ...	...	do.	do.	1st July,	1921.
Yeap Hin Tat ...	...	do.	do.	14th August,	1922.
Lim Khay Seng ...	...	do.	do.	1st March,	1923.
Lo Siew Tean ...	...	do.	do.	1st July,	1923.
Teoh Cheng Hoe ...	...	do.	do.	1st December,	1923.
M. S. d'Orville ..	...	do.	do.	18th February,	1924.
Oh Cheng Guan ...	...	do.	do.	18th May,	1926.
Liew Ah Foo ...	...	do.	do.	20th May,	1926.
P. Gantier ...	...	do.	do.	6th July,	1928.
Lim Tiek Ghee ..	...	do.	do.	16th January,	1930.
Rejab bin Othman ...	...	do.	do.	6th February,	1930.
Low Cheng Cheow ...	...	do.	do.	21st August,	1930.
Oh Cheng Ian ...	...	do.	do.	1st November,	1930.

C. B. de Souza ..	...	Sanitary Sub-Inspector, joined the service	12th June,	1933.
Hamad bin Senawi	...	Milk Inspector,	do.	2nd July, 1906.
Martin Loh ...	...	Chief Registration Clerk,	do.	1st January, 1909.
E. D. Joseph ...	...	2nd Clerk	do.	6th October, 1920.
Ooi Leong Tiek ..	...	3rd Clerk	do.	1st January, 1921.
Lim Chin Aun ..	...	4th Clerk	do.	17th October, 1928.
Miss H. Flint ...	...	S.R.N., C.M.B., A.R. San. I.,		
		District Nurse,	do.	1st May, 1928.
Miss F. M. Sloan	...	S.R.N., C.M.B.,		
		District Nurse,	do.	13th November, 1931.

Eight qualified midwives as part-time District Nurses.

MUNICIPAL HEALTH OFFICE,

Penang, 11th September, 1934.

To

THE MUNICIPAL COMMISSIONERS.

GENTLEMEN,

I have the honour to submit the following report on the health of the Municipality during 1933.

I. POPULATION.

The estimated mid-year population was 156,014. This figure is arrived at by the Registrar General's method of estimation, which is commonly adopted at Home, and probably the best available.

The estimated distribution of the population at the middle of 1933 among the various nationalities is as follows:—

TABLE I.

Nationality	Males	Females	Total	Per cent. of Total
European ...	808	463	1,271	1
Eurasian ...	815	956	1,771	1
Chinese ...	63,932	43,037	106,969	69
Malay ...	10,217	10,394	20,611	13
Indian ...	18,582	5,299	23,881	15
Others ...	892	619	1,511	1
Total ...	95,246	60,768	156,014	100

2. BIRTHS.

There were 5,052 births registered of whom 2,605 were males and 2,447 females, the birth rate being 32.38 per thousand. The figures for 1932 were, births 5,129 and birth rate 33.54.

Reckoned on the estimated female population alone the birth rate was 83.14 per thousand to 86.12 per thousand in 1932.

F 2

The number of births and birth rates for the various nationalities were as follows:—

TABLE II.

Nationality	Number of births.			Birth rate per thousand.	
	Males	Females	Total	Total population	Female population
European ...	15	17	32	24.39	69.11
Eurasian ...	20	32	52	29.36	54.39
Chinese ...	1,904	1,751	3,655	34.17	84.93
Malay ...	304	283	587	28.48	56.47
Indian ...	351	358	709	29.69	133.80
Others	11	6	17	11.25	27.46

A comparison with the births registered during the previous ten years is shown here:—

TABLE III.

Year	European	Eurasian	Chinese	Malay	Indian	Others	Total
1923	59	53	2,818	573	499	26	4,028
1924	53	54	2,903	660	544	43	4,257
1925	46	52	3,135	562	497	26	4,318
1926	51	55	3,193	585	514	36	4,434
1927	61	75	3,714	638	631	33	5,151
1928	58	52	3,928	595	661	38	5,332
1929	45	48	3,970	663	656	28	5,410
1930	61	56	4,084	674	730	25	5,630
1931	49	58	3,899	596	677	36	5,315
1932	50	63	3,739	568	679	30	5,129
Average for ten years	53	57	3,538	611	609	32	4,900
1933	32	52	3,655	587	709	17	5,052

A comparison of the births and deaths in the different nationalities may be of interest:—

TABLE IV.

Nationality		Births	Birth rate per thousand.	Deaths	Death rate per thousand.
European	...	32	24.39	6	4.72
Eurasian	...	52	29.36	27	15.25
Chinese	...	3,655	34.17	2,202	20.59
Malay	...	587	28.48	485	23.53
Indian	...	709	29.69	430	18.01
Others	...	17	11.25	22	14.56

There were 158 still-births reported during the year.

3. DEATHS.

The gross total of deaths within Municipal limits during the year was 3,592 and crude death rate 23.02; of this number 420 were not normally resident in Penang and had been less than three months within Municipal limits. Omitting these we have 3,172 deaths and a corrected death rate of 20.33 per thousand.

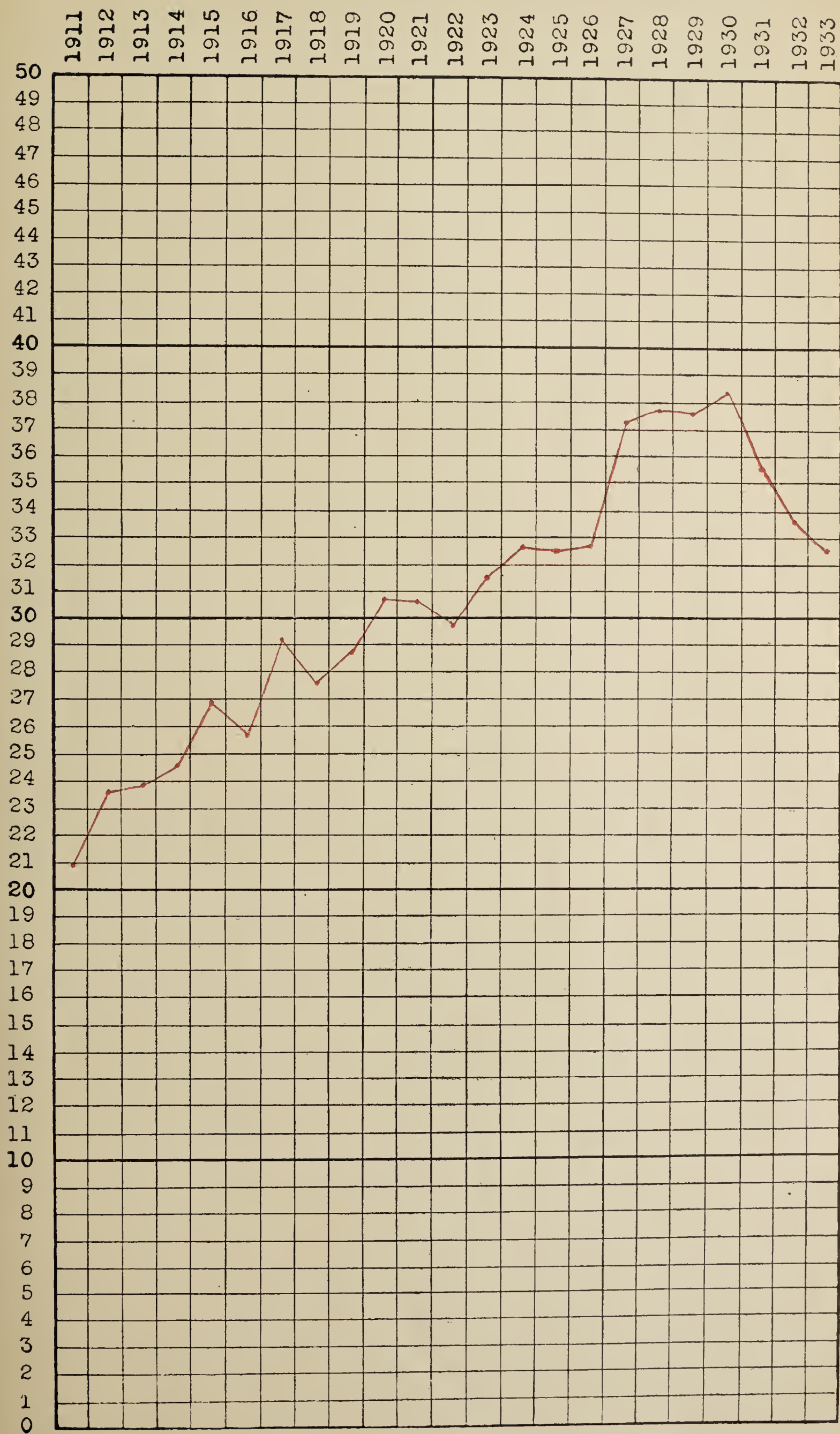
The following table shows the distribution of the deaths in age groups and nationalities.

TABLE V.

Nationalities.	Sex.	A G E S .														GRAND TOTAL
		Under 1 mth	2-3 mths.	4-12 mths.	1-5 yrs.	6-15 yrs.	16-25 yrs.	26-35 yrs.	36-45 yrs.	46-55 yrs.	56-65 yrs.	66-75 yrs.	Over 75 yrs.	Unknown	TOTAL	
European ...	M	—	—	—	—	—	—	—	—	—	2	—	—	—	2	6
	F	—	—	—	—	—	—	1	1	—	1	1	—	—	4	
Eurasian ...	M	—	—	—	3	—	1	1	—	5	1	2	2	—	15	27
	F	—	1	—	—	1	—	3	1	3	2	1	—	—	12	
Chinese ...	M	86	100	111	129	21	68	126	195	211	154	79	20	1	1301	2202
	F	74	68	99	120	45	55	96	91	68	71	68	46	—	901	
Malay ...	M	22	18	18	22	9	35	40	32	26	20	14	13	—	269	485
	F	11	19	21	13	4	23	36	19	23	13	13	21	—	216	
Indian ...	M	21	9	13	19	4	24	43	40	26	24	13	8	—	244	430
	F	21	8	14	25	14	21	28	10	13	14	11	7	—	186	
Others ...	M	1	—	1	1	1	3	2	—	1	3	2	1	—	16	22
	F	—	1	—	—	—	1	3	—	1	—	—	—	—	6	
Total ...	M	130	127	143	174	35	131	212	267	269	204	110	44	1	1847	3172
	F	106	97	134	158	64	100	167	122	108	101	94	74	—	1325	
Grand Total		236	224	277	332	99	231	379	389	377	305	204	118	1	3172	

PENANG MUNICIPALITY

BIRTH RATE





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Compared with 1932, the Chinese deaths have increased by 16 and the Malay deaths by 11 while the Indian deaths have decreased by 60.

The total deaths of each nationality in the last ten years are shown here.

TABLE VI.

Year.	European.	Eurasian.	Chinese.	Malay.	Indian.	Others.
1924	6	30	2,048	519	542	17
1925	5	28	2,165	468	538	36
1926	9	34	2,436	497	568	26
1927	11	29	2,664	550	758	33
1928	11	24	2,544	434	623	32
1929	7	27	2,388	465	560	33
1930	14	23	2,245	409	549	19
1931	10	26	2,244	451	489	21
1932	6	28	2,186	474	490	16
1933	6	27	2,202	485	430	22

4. INFANT MORTALITY.

Table VII shows according to nationality the infant mortality, that is, deaths of children under one year of age per 1,000 births occurring during the same period, and a comparison with 1932.

TABLE VII.

Nationality.	Births	Deaths under one year.	Infant deaths per thousand births.	
			1933	1932
European	32	—	—	20
Eurasian	52	1	19	95
Chinese	3,655	538	147	132
Malay	587	109	186	141
Indian	709	86	121	149
Others	17	3	176	167
Total	5,052	737	146	134

The chief causes of infant deaths and the mortality compared with that in previous years from the same causes are given in Table VIII.

TABLE VIII.

Disease.	Infant deaths per thousand births.									
	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
Intestinal diseases ..	23	19	21	17	17	18	23	17	20	18
Respiratory diseases ...	23	27	19	32	32	31	26	28	27	27
Prematurity and Debitity ...	27	23	29	29	29	25	21	19	19	20
Convulsions ..	43	47	60	62	62	57	50	45	44	48

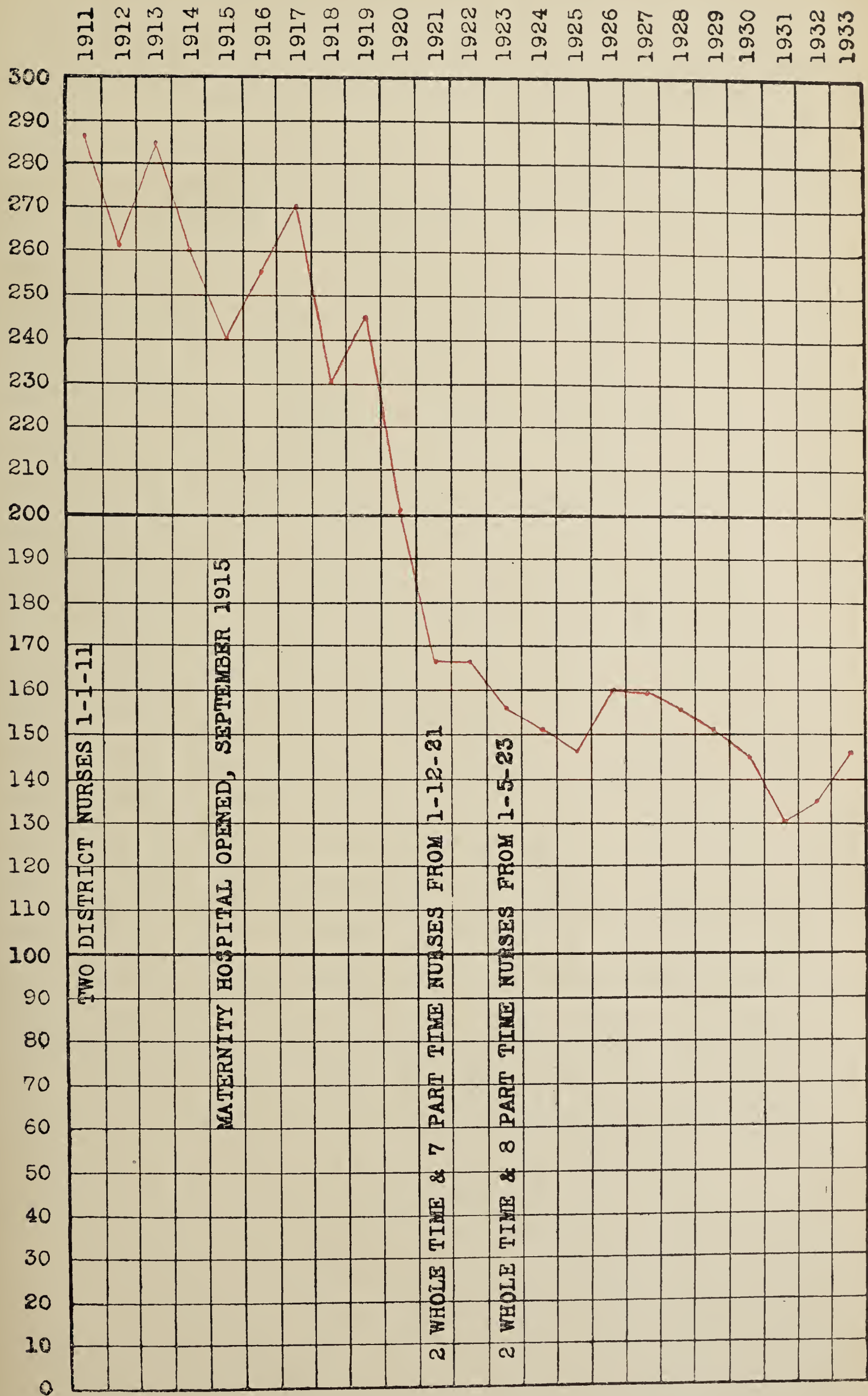
These causes accounted for 575 of the 737 infant deaths which occurred.

245 infants were certified as having died from convulsions; the corresponding figure for 1932 was 225.

Table VIII is unreliable, the only figure that may be used with any exactitude for comparison are those shown in Table VII, and in the Infant Mortality chart.

PENANG MUNICIPALITY

INFANT MORTALITY



NOTE:—Registration of births is believed to have been more accurate from September, 1920.

Table IX is given below to show a comparison between births, infant mortality and general death rate for the preceding ten years and for 1933.

TABLE IX.

Year	Estimated population	Births		Deaths under 1 year.		Deaths at all ages.			
		Total	Rate per thousand population	Total	Rate per thousand births	Crude Total	Corrected Total	Crude rate	Corrected rate
1923 ...	128,300	4,028	31.39	626	155	3,801	3,183	29.62	24.81
1924 ...	130,810	4,257	32.54	641	151	3,811	3,162	29.13	24.17
1925 ...	133,373	4,318	32.38	634	147	3,858	3,240	28.93	24.29
1926 ...	136,000	4,434	32.60	705	159	4,396	3,570	32.32	26.25
1927 ...	138,635	5,151	37.15	816	158	4,860	4,045	35.05	29.18
1928 ...	141,348	5,332	37.72	826	155	4,670	3,668	33.04	25.95
1929 ...	144,114	5,410	37.54	815	151	4,126	3,480	38.63	24.15
1930 ...	146,935	5,630	38.32	809	144	3,939	3,259	26.81	22.18
1931* ...	149,964	5,315	35.44	699	130	3,710	3,241	24.74	21.61
1932 ...	152,908	5,129	33.54	688	134	3,569	3,200	23.34	20.93
Average for the preceding ten years	140,239	4,900	34.94	725	148	4,074	3,405	29.05	24.28
1933 ...	156,014	5,052	32.38	737	146	3,592	3,172	23.02	20.33

*Census year.

5. CAUSE OF DEATH.

Table X shows the age, sex and cause of death certified: 739 of the certificates were from Hospitals, 645 from Private Practitioners, 25 from the Coroner and 1,763 or 55.57% of the total from the Deputy Registrar of Deaths.

In other words less than half of the cases were under medical attention before death. As the number of post-mortem examinations made was so small as to be negligible the diagnoses here tabulated must be accepted with reserve.

Since the year 1921, the Deputy Registrar of Deaths has been instructed to use the term "Unspecified Fever" for the cause of death, where the information obtainable does not seem to warrant a more definite diagnosis.

TABLE X.

DEATHS.	SEX.	A G E S .													Total	Grand Total
		Under 1 mth	2-3 mths.	4-12 mths.	1-5 years	6-15 years	16-25 years	26-35 years	36-45 years	46-55 years	56-65 years	66-75 years	over 75 yrs.	Un- known		
Enteric fever ...	M.	—	—	—	—	2	6	2	2	—	1	1	—	—	14	21
	F.	—	—	—	—	2	2	3	—	—	—	—	—	—	7	
Diarrhoea ...	M.	9	8	12	15	—	1	1	3	5	2	1	—	—	57	108
	F.	12	9	8	7	1	2	5	2	—	3	2	—	—	51	
Dysentery ...	M.	—	—	—	2	1	2	4	4	5	1	—	—	—	19	27
	F.	—	—	—	2	—	—	1	3	1	—	1	—	—	8	
Unspecified feyer ...	M.	3	14	31	43	16	32	43	46	39	13	5	1	—	286	523
	F.	4	15	34	43	22	25	32	26	20	11	4	1	—	237	
Syphilis ...	M.	1	1	—	—	—	2	7	4	10	8	2	—	—	35	46
	F.	2	1	1	—	—	1	1	1	3	1	—	—	—	11	
Puerperal fever ...	F.	—	—	—	—	—	2	2	—	—	—	—	—	—	4	4
Other septic diseases ...	M.	3	2	3	3	2	6	8	8	6	5	—	—	—	46	79
	F.	5	1	2	3	3	6	3	3	4	3	—	—	—	33	
Pulmonary Tuberculosis ...	M.	—	—	1	—	—	27	39	48	36	19	5	1	—	176	232
	F.	—	—	—	—	4	9	18	17	4	4	—	—	—	56	
Other tubercular diseases ...	M.	—	—	1	1	4	2	—	1	1	1	1	—	—	12	21
	F.	—	—	1	1	2	2	1	1	—	—	1	—	—	9	
Leprosy ...	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10
	F.	—	—	—	—	—	2	4	2	—	2	—	—	—	10	
Tetanus ...	M.	—	—	—	—	—	1	1	1	—	1	—	—	—	4	4
	F.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Diphtheria ...	M.	—	—	—	7	—	—	—	—	—	—	—	—	—	7	15
	F.	—	—	1	4	3	—	—	—	—	—	—	—	—	8	
Influenza ...	M.	—	—	—	—	—	2	—	—	1	—	—	1	—	4	8
	F.	—	—	1	—	—	2	1	—	—	—	—	—	—	4	
Whooping Cough ...	M.	—	—	1	—	—	—	—	—	—	—	—	—	—	1	1
	F.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Erysipelas ...	M.	—	1	—	—	—	—	—	—	—	—	—	—	—	1	2
	F.	—	—	—	—	—	—	—	—	—	—	1	—	—	1	
Totals to carry forward ...	M.	16	26	49	71	25	81	105	117	103	51	15	3	—	662	1101
	F.	23	26	48	60	37	53	71	55	32	24	9	1	—	439	

DEATHS.	SEX.	A G E S .													Total	Grand Total
		Under 1 mth.	2-3 mths.	4-12 mths.	1-5 years	6-15 years	16-25 years	26-35 years	36-45 years	46-55 years	56-65 years	66-75 years	over 75 yrs.	Un- known		
Brought forward ...	M.	16	26	49	71	25	81	105	117	103	51	15	3	—	662	1101
	F.	23	26	48	60	37	53	71	55	32	24	9	1	—	439	
Malaria ...	M.	—	—	—	3	—	3	6	5	3	2	1	—	—	23	51
	F.	—	—	—	1	3	7	8	3	1	4	1	—	—	28	
Worms ...	M.	—	—	—	5	—	1	—	—	1	—	—	—	—	7	18
	F.	—	1	—	5	4	—	—	—	1	—	—	—	—	11	
Rheumatism ...	M.	—	—	—	—	—	—	—	1	1	2	—	—	—	4	9
	F.	—	—	—	—	—	—	—	2	2	1	—	—	—	5	
Cancer ...	M.	—	—	—	—	—	—	1	4	4	5	3	2	—	19	28
	F.	—	—	—	—	—	—	2	1	2	2	1	1	—	9	
Anaemia ...	M.	—	—	—	1	—	—	1	2	1	1	—	—	—	6	17
	F.	—	—	—	1	1	3	3	2	—	1	—	—	—	11	
Rheumatism ...	M.	1	—	1	—	—	5	20	18	19	3	2	2	—	71	92
	F.	—	—	—	1	—	2	10	4	1	2	1	—	—	21	
Premature birth ...	M.	33	—	—	—	—	—	—	—	—	—	—	—	—	33	61
	F.	28	—	—	—	—	—	—	—	—	—	—	—	—	28	
Old age ...	M.	—	—	—	—	—	—	—	—	—	29	42	26	—	97	221
	F.	—	—	—	—	—	—	—	—	2	22	52	48	—	124	
Convulsions ...	M.	39	56	50	41	2	—	—	—	—	—	—	—	—	188	320
	F.	23	41	36	29	3	—	—	—	—	—	—	—	—	132	
Other diseases of Nervous system ...	M.	—	1	4	1	1	1	3	3	5	1	2	1	—	23	41
	F.	—	—	3	2	2	3	1	2	2	1	2	—	—	18	
Organs of special sense ...	M.	—	1	—	—	—	—	—	—	—	—	—	—	—	1	1
	F.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Circulatory system ..	M.	5	—	1	1	—	9	29	29	42	30	15	2	—	163	256
	F.	5	—	1	—	1	8	20	11	23	10	7	7	—	93	
Totals to carry forward ...	M.	94	84	105	123	28	100	165	179	179	124	80	36	—	1297	2216
	F.	79	68	88	99	51	76	115	80	66	67	73	57	—	919	

DEATHS.	SEX.	A G E S .														Total	Grand Total
		Under 1 mth.	2-3 mths.	4-12 mths.	1-5 years	6-15 years	16-25 years	26-35 years	36-45 years	46-55 years	56-65 years	66-75 years	over 75 yrs.	Un- known			
Brought forward ...	M.	94	84	105	123	28	100	165	179	179	124	80	36	—	1297	2216	
	F.	79	68	88	99	51	76	115	80	66	67	73	57	—	919		
Bronchitis ...	M.	1	7	8	8	—	4	5	20	25	28	10	2	—	118	190	
	F.	—	11	6	10	—	2	3	6	16	12	3	3	—	72		
Pneumonia ...	M.	1	6	8	6	1	7	12	9	7	10	5	2	—	74	116	
	F.	—	2	6	10	3	5	3	3	4	3	1	2	—	42		
Other diseases of respiratory system ...	M.	11	17	18	30	4	11	5	15	12	5	1	1	—	130	227	
	F.	5	5	25	25	8	4	8	7	4	2	2	2	—	97		
Enteritis ...	M.	3	5	3	2	—	1	—	3	1	3	1	—	—	22	51	
	F.	2	7	5	7	—	2	1	2	2	—	1	—	—	29		
Diseases of liver ...	M.	2	1	—	—	—	4	5	5	8	5	3	—	—	33	39	
	F.	1	1	—	1	—	—	—	1	—	—	2	—	—	6		
Other diseases of digestive system ...	M.	1	2	—	—	—	1	4	9	8	5	3	—	—	33	48	
	F.	1	1	2	—	—	1	3	5	—	2	—	—	—	15		
Urinary system ...	M.	2	—	—	2	1	1	8	21	21	20	5	2	—	83	162	
	F.	—	—	1	3	—	8	15	14	9	11	11	7	—	79		
Generative organs ...	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	
	F.	—	—	—	—	—	—	3	—	1	—	—	—	—	4		
Child birth and abortion ...	F.	—	—	—	—	—	1	15	3	—	—	—	—	—	19	19	
Bones and Joints ...	M.	—	—	—	—	1	—	—	—	—	—	—	—	—	1	2	
	F.	—	—	—	—	—	—	—	—	1	—	—	—	—	1		
Accident and Negligence ...	M.	—	—	—	1	—	—	6	—	1	1	—	—	—	9	14	
	F.	—	—	—	3	1	1	—	—	—	—	—	—	—	5		
Homicide, Suicide and Execution ...	M.	—	—	—	—	—	2	2	4	2	1	—	—	1	12	15	
	F.	—	—	—	—	1	—	1	—	1	—	—	—	—	3		
Debility ...	M.	15	5	1	2	—	—	—	—	1	—	—	1	—	25	52	
	F.	18	2	1	—	—	—	—	1	—	1	1	3	—	27		
Diabetes ...	M.	—	—	—	—	—	—	—	2	4	2	2	—	—	10	17	
	F.	—	—	—	—	—	—	—	—	4	3	—	—	—	7		
Total ...	M.	130	127	143	174	35	131	212	267	269	204	110	44	1	1847	3172	
	F.	106	97	134	158	64	100	167	128	108	101	94	74	—	1325		

A comparison between the number of deaths attributed to some of the principal causes in 1933 and in the preceding ten years is shown here.

TABLE XI.

Disease.			1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	Average for pre- ceding ten years	1933
Pulmonary Tuberculosis ...	...	...	454	511	499	460	422	432	485	374	420	324	438	232
Pneumonia ...	...	...	222	188	276	349	413	312	300	249	231	120	266	116
Bronchitis ...	...	...	112	58	113	91	142	190	133	122	106	155	122	190
Other Respiratory Diseases ...	...	...	95	119	115	82	140	168	190	145	226	224	150	227
Circulatory System ...	...	...	199	210	177	174	220	188	204	190	190	224	198	256
Enteric Fever ...	...	...	8	9	11	8	12	23	14	15	25	37	16	21
Enteritis ...	...	...	97	9	35	42	36	35	44	62	68	72	50	51
Dysentery ...	...	...	75	81	58	89	87	94	42	49	58	32	66	27
Diarrhoea ...	...	...	166	157	125	144	149	154	157	158	116	110	144	108
Other Diseases of Digestive System			45	33	40	39	39	49	52	62	51	64	47	48
Urinary System ...	...	...	54	52	103	106	144	103	111	98	105	145	102	162
Malaria ...	...	...	101	52	97	134	147	168	103	89	72	57	102	51
Unspecified Fever ...	...	...	524	589	659	809	767	413	435	400	427	507	553	523
Syphilis ...	...	...	38	39	30	26	31	43	30	53	48	53	39	46
Convulsions ...	...	...	106	202	218	318	438	424	380	360	316	303	307	320
Other Septic Diseases ...	...	...	92	61	49	71	87	77	69	85	80	72	74	79
Beri-beri ...	...	...	30	15	6	9	16	11	30	14	30	50	21	92
Debility ...	...	...	77	82	61	62	61	79	56	69	51	50	65	52
Premature Birth ...	...	...	48	54	53	72	63	85	82	62	64	67	65	61
Old Age ...	...	...	274	302	287	211	293	290	242	255	236	237	263	221

The distribution of the chief causes of death among the various nationalities is shown in Table XII.

TABLE XII.

Cause of Death.			European	Eurasian	Chinese	Malay	Indian	Others	Total
Pulmonary Tuberculosis	...	...	1	4	171	16	37	3	232
Pneumonia	...	...	—	2	85	4	24	1	116
Bronchitis	...	...	—	2	148	23	15	2	190
Other Respiratory Diseases	...	...	—	—	167	14	44	2	227
Circulatory System	...	...	2	3	178	44	29	—	256
Enteric Fever	...	...	—	—	18	3	—	—	21
Enteritis	...	...	1	—	42	1	7	—	51
Dysentery	...	...	—	1	22	1	2	1	27
Diarrhoea	...	...	—	—	90	3	14	1	108
Other Diseases of Digestive System	...	...	—	1	35	2	10	—	48
Urinary System	...	...	—	2	114	23	21	2	162
Malaria	...	...	—	1	40	3	4	—	48
Unspecified Fever	...	...	—	1	276	164	76	6	523
Syphilis	...	...	—	—	40	—	6	—	46
Convulsions	...	...	—	1	230	66	22	1	320
Other Septic Diseases	...	...	—	2	59	4	14	—	79
Beri-beri	...	...	—	—	82	4	6	—	92
Debility	...	...	—	—	28	10	14	—	52
Premature Birth	...	...	—	—	34	16	11	—	61
Old Age	...	...	—	—	129	61	27	4	221

Details are appended of the sources of certification of the principal causes of death.

TABLE XIII.

Cause of Death.	Number certified by			
	Hospitals	Private Prac- titioners	Deputy Registrar of Death	Coroner
Pulmonary Tuberculosis	125	45	61	1
Pneumonia	58	49	8	1
Bronchitis	11	11	168	—
Other Respiratory Diseases	57	46	123	1
Circulatory System	32	81	138	5
Enteric Fever	12	8	1	—
Enteritis	14	20	17	—
Dysentery	18	8	1	—
Diarrhoea	5	24	79	—
Other Diseases of Digestive System	23	18	7	—
Urinary System	33	47	82	—
Malaria	25	25	1	—
Unspecified Fever	10	37	476	—
Syphilis	43	1	2	—
Convulsions	15	73	232	—
Other Septic Diseases	34	22	23	—
Beri-beri	72	15	3	2
Debility	4	9	39	—
Premature Birth	24	4	33	—
Old Age	4	9	208	—

6. SEASONAL MORTALITY.

The deaths and death rate for each month are here recorded.

TABLE XIV.

Month.	Deaths.	Death rate per thousand.	Month.	Deaths.	Death rate per thousand.
January ...	286	21.58	July ...	244	18.41
February ...	267	22.31	August ...	234	17.66
March ...	257	19.39	September ...	229	17.86
April ...	250	19.50	October ...	290	21.89
May ...	265	20.00	November ...	301	23.48
June ...	260	20.28	December ...	289	21.81

7. INFECTIOUS DISEASES.

Table XV shows the incidence among the various nationalities of the principal infectious diseases which occurred during the year.

TABLE XV.

Nationality	Chicken-pox	Enteric fever	Tuberculosis	Influenza	Puerperal fever	Diphtheria	Measles	Erysipelas	Whooping Cough	Mumps	Total
European ... M.	3	2	—	—	—	2	—	—	—	—	7
European ... F.	2	—	1	—	—	1	—	—	—	—	4
Eurasian ... M.	1	—	3	1	—	—	—	—	—	—	5
Eurasian ... F.	2	—	1	—	—	—	—	—	—	—	3
Chinese ... M.	12	24	139	1	—	15	—	3	1	—	195
Chinese ... F.	7	10	50	1	4	23	—	1	—	—	96
Malay ... M.	6	2	12	2	—	1	—	—	—	—	23
Malay ... F.	3	3	5	1	—	—	—	—	—	—	12
Indian ... M.	99	2	31	—	—	1	—	2	—	3	138
Indian ... F.	16	1	8	2	2	3	1	—	—	—	33
Others ... M.	—	—	3	—	—	—	—	—	—	—	3
Others ... F.	1	—	—	—	1	—	—	—	—	—	2
Total ... M.	121	30	188	4	—	19	—	5	1	3	371
Total ... F.	31	14	65	4	7	27	1	1	—	—	150
Grand Total ...	152	44	253	8	7	46	1	6	1	3	521

Table XVI shows the main figures for the last 25 years relating to births, deaths, and infant mortality.

TABLE XVI

Year.	Total number of		Birth rate	Crude death rate.	Infant Mortality
	Births	Deaths (crude)			
1909	1656	3923	16.15	38.25	337 (a)
1910	1905	3912	18.39	37.76	290
*1911	2133	4045	21.02	39.88	287 (b)
1912	2421	3829	23.69	37.47	261
1913	2464	3794	23.95	36.86	284
1914	2545	3774	24.55	36.40	260
1915	2808	3390	26.89	32.46	239 (c)
1916	2708	3341	25.74	31.76	255
1917	3099	4071	29.25	38.42	269
1918	2940	4909	27.55	45.99	229
1919	3203	4466	28.86	41.54	244
1920	3321	4090	30.67	37.75	205
*1921	3768	3775	30.56	30.61	167 (d)
1922	3738	3768	29.71	22.94	166
1923	4028	3801	31.39	29.62	155 (e)
1924	4257	3811	32.54	29.13	151
1925	4318	3858	32.38	28.93	147
1926	4434	4396	32.60	32.32	159
1927	5151	4860	37.15	35.05	158
1928	5332	4670	37.72	33.04	155
1929	5410	4126	37.54	28.63	151
1930	5630	3939	38.32	26.81	144
*1931	5315	3710	35.44	24.74	130
1932	5129	3569	33.54	23.34	134
1933	5052	3592	32.38	23.02	146

*Census year

Note :—

(a) 1st January, 1909—one District Nurse.

(b) 1st January, 1911—two District Nurses.

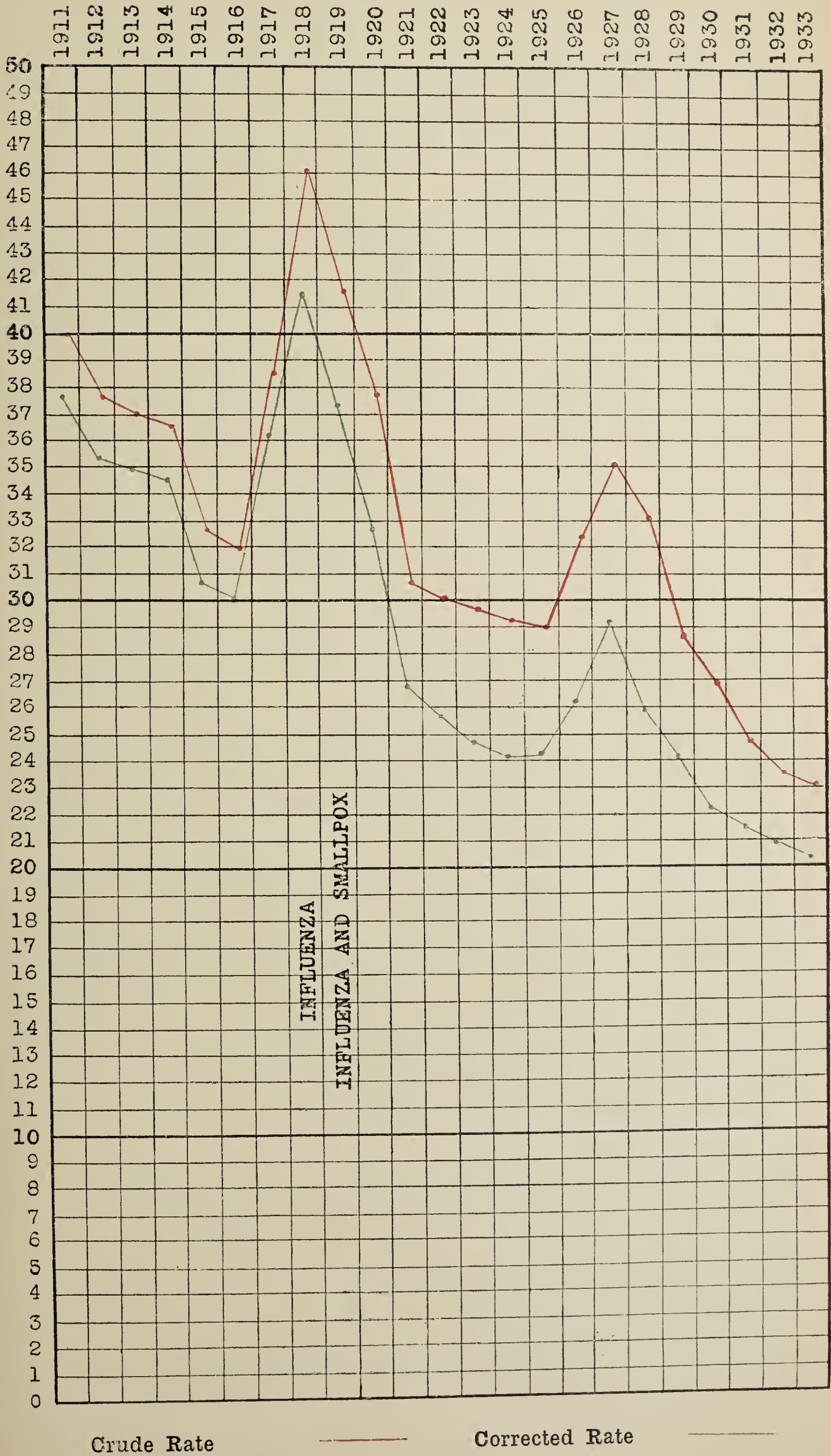
(c) September, 1915—Maternity Hospital opened.

(d) 1st December, 1921—two whole-time and seven part-time District Nurses.

(e) 1st May, 1923—two whole-time and eight part-time District Nurses.

PENANG MUNICIPALITY

DEATH RATES



8. REGISTRATION OF BIRTHS AND DEATHS.

The system of registration is simple and well carried out.

Notification may be made at any Police Station or Government Hospital or at the Municipal Office.

Deaths must be notified within twelve hours, or, on payment of a late fee within three days.

Births are notified within fourteen days, or, with late fee within forty-two days. Earlier notification might of course result in the saving of many lives through the efforts of our District Nurses, but unfortunately, as the law stands, we cannot enforce it. However, there has been a definite increase in the number of early notifications in cases attended by midwives by supplying notification forms to them insisting on their immediate completion and despatch by post to the Health Office.

When the cause of death has been certified neither by a registered medical practitioner, nor by the Coroner, the Deputy Registrar of Deaths must make the best diagnosis he can on the information which he can elicit. This was the case in 55.57 per cent of the total.

9. MATERNITY AND CHILD WELFARE.

In this department the work has been carried on by Miss H. Flint and Miss F. M. Sloan, both whole time District Nurses.

Two Municipal cars are kept for their use.

Eight locally qualified midwives were employed as part-time nurses, their work being home visitation.

The main part of the town is divided for this purpose into eight districts, to each of which a midwife is allocated: each District Nurse superintends the work in four districts.

The total number of visits and revisits made by the District Nurses and the eight midwives was 54,538.

At the end of the year (under the Midwives Ordinance 1923) 78 midwives were registered as Class "A", 226 as Class "B", and 14 as Class "C".

Class "C" are the local "bidans"—unqualified midwives—who were registered after the Central Midwives Board (S.S.) had certified that they possessed a competent practical knowledge of conducting midwifery cases.

The following is the routine method of getting in touch with the mother and newly born child. When a birth is reported, a Sanitary Sub-Inspector proceeds to verify or correct the address given. A daily list of the addresses is then given to the District Nurses who, on the following day, visit the houses to see what is required. If the case is already under medical supervision, immediate responsibility rests on the practitioner attending.

In all other cases the District Nurses examine the baby and the mother. If there is not a registered midwife in attendance one of the part-time qualified midwives takes charge of the case for as long as may be necessary, the District Nurses revisiting as required.

The infant mortality for 1933 was 146.

122 babies died under the age of seven days, and 51 between the ages of seven and fourteen days.

Of the 737 infants who died under the age of one year, 236 were less than one month old, and 224 were between one month and three months old.

Earlier notification of births might be reasonably expected to result in a reduction of the number of deaths within the first fortnight but probably a more important factor would be the provision of some continued form of ante-natal attention such as could be given at a welfare centre, under trained medical supervision.

This, too, would be a valuable source of education as there is little doubt that a great deal of this appalling mortality is due to ignorance on the part of the parents.

A large part of the Nurses' time is spent in instructing both midwives and mothers, but it is obvious that the demonstrations which could be given at a centre would be of immense practical value especially to the mothers.

10. VACCINATION.

Public vaccination within Municipal limits is performed chiefly by our staff.

Our system of infant vaccination is the same as in recent years.

When a birth is reported, a Sub-Inspector proceeds to verify the address, if possible, and gives advice as to vaccination and how to get free vaccination if desired, at the same time giving the formal vaccination notice as required by law.

After six months, if the vaccination, or the removal from the town, or the death of the child has not been reported, the house is revisited and the parents reminded, both verbally and by a formal notice, that vaccination is overdue.

Most of the vaccination is done by house to house visitation, and the results are satisfactory. Two of our Sub-Inspectors act as whole time vaccinators and this method, though it costs a heavy expenditure in Inspector's time, seems the most practicable and worth continuing.

5,052 births were reported during the year.

Our staff did 3,474 vaccinations of which 3,229 were primary and 245 secondary. In addition Government vaccinators performed during the year 3,535 secondary vaccinations mostly in schools and private practitioners performed 1,023 primary vaccinations.

Of the 737 infants who died under the age of one year, 662 were unvaccinated.

No serious results have been reported here from vaccination.

11. ANTI-MOSQUITO WORKS.

At the beginning of the year our Indian labour force consisted of 64 coolies and 60 boys or "chokras."

The men were divided into four gangs, in each of which one of their number was appointed head man with supervisory powers. There were two gangs of oilers with eight and ten men in each, each gang working under a Supervisor.

The working gangs were employed chiefly in constructing ditches, clearing and training streams and stagnant ditches, filling in pools and hollows, and cutting undergrowth, much of the work being done on so-called "reserve roads."

In the spring a Sanitary Sub-Inspector was detailed for special anti-malarial work round the boundary and along the beds of the main streams, and in consequence of his reports a stronger form of anti-malarial oil was introduced during May. About the same time a Hill Gang of 8 men was instituted by withdrawing some of the coolies from the other gangs. The work of this gang was entirely anti-malarial, and in some parts of the hill, the oiling boundary was extended to a higher level.

During the dry periods when less oiling was necessary this gang did valuable work in making rubble drains through swamps, thereby reducing expenditure in oil.

The reduction in the number of breeding places of *A. maculatus* fully justified the starting of this Hill Gang and, so long as the hill is allowed to remain in its present denuded state, so long will special precautionary measures be necessary.

The boys, divided in five gangs of twelve, each gang working under a Supervisor, were most useful in collecting, and, where possible, burying coconut shells, tins and other receptacles likely to be mosquito breeding places. They also do some minor oiling work.

Apart from the Health Officer's personal visits to these gangs, they were inspected and directed daily by the Sanitary Inspector in whose districts they were working.

Towards the end of the year there was a marked increase in the prevalence of mosquitoes in the Municipal area but fortunately not of the types known to be carriers of malaria. This increase, I believe, was due largely to the daily soft showers which encouraged moisture in the hollows and forks in trees, thereby creating breeding places which would either have been washed out by the more typical tropical showers or dried up had the intervals between the shows been longer. A rapid improvement resulted from the work of a tree filling gang—4 coolies and one Supervisor—who started on the 1st October to fill in such breeding places with cement.

The total oil consumption for the year was "Graham's" mosquito-killer 34,000 gallons and "Shell" anti-malarial mixture 19,840 gallons; the total cost of the oil during the year was \$13,548-80.

Towards the cost of work done by Municipal coolies on private property \$1,253-15 were reimbursed.

Penang Municipality is justly proud of its reputation for freedom from mosquitoes and it gives great satisfaction to learn of the increasing numbers of the inhabitants who for the greater part of the year enjoy their nights' rest without the protection of mosquito nets. The present state, however, is not such as justifies any relaxation of efforts either on the part of the health staff or the public, for during the year 250 Mosquito Orders were served of which less than half would have been necessary had the offenders shown a modicum of altruism.

12. PERMANENT ANTI-MALARIAL WORKS.

The only permanent anti-malarial work done during the year was really an extension of the scheme for the Batu Gantong area. Two streams were subsoiled necessitating the laying of 1,279 feet of subsoil pipes.

In the Scotland Road area, repairs to some of the subsoil pipes had to be done as an urgent measure following a sudden flooding of the area.

Several areas have been inspected and plans prepared for a continuance of this permanent work, the aim being more or less to surround the town with a barrier which it is hoped will exclude the possibility of an invasion by malaria carrying mosquitoes—a possibility to which the town must always be alive, considering the topography of the surrounding country.

13. TUBERCULOSIS.

Tuberculosis is still the outstanding and unsolved problem of the Municipal Health Authority and is likely to be so for some years to come, for their eyes cannot be closed to the fact that the mode of life of the majority is nothing short of ideal for the propagation of the disease. Overcrowding with its attendant evils in the form of lack of sunshine and fresh air, dirt in every form, poor nutrition, and gross infection can only result in a high mortality from a disease which is known to flourish under such conditions.

The object of the routine sanitary work of the department is the improvement in the living conditions of the masses, without which there can be no hope for any material reduction in the death rate from Tuberculosis. Much of the possible benefit of the above work is lost by the apparent resistance of the public to the efforts of the health staff which, if given more intelligent consideration, would be appreciated as achievements essential to the enjoyment of good health.

Although it is satisfactory to note that the total deaths from Tuberculosis during the year show a remarkable reduction from those of the previous year (253 for 1933 as against 324 for 1932), it must be noted that the cause of death is diagnosed on meagre and often misleading information in over 50% of the total. It is, therefore, more than probable that a certain number of the 523 deaths shown under the heading of Unspecified Fever ought to be included amongst the deaths from Tuberculosis.

In support of this, Table XIII shows that the Deputy Registrar of Deaths decides the cause in 476 of the 523 deaths notified. Since all his opinions have to be formed on information obtained from friends and relatives of the deceased whose minds at the time are naturally distressed and whose ideas of sickness are normally unreliable, it is not too much to conclude that many deaths shown as Unspecified Fever are really due to Tuberculosis in some form or other. Until such time as the general practitioners' advice is sought prior to death, it is impossible to apportion these figures accurately, unless a post mortem were performed on every cadaver.

By far the largest number of notifications come from the General Hospital and few, if any, of these refer to "early" cases. For success in any Tuberculosis scheme the co-operation of the family doctor is essential, but until the public realise that any form of notification is for their ultimate good, so long will the general practitioner be unable to ensure assistance in this respect. However, the advance in public opinion regarding preventive health work is noticeable and, by fostering its interest in our daily work, we hope for that gradual and steady progress which in the end will achieve more than transient outbursts of enthusiasm for sanitary reforms.

When facing this all important problem the following factors must be kept in view, and proportionately as these are regarded essential to a well ordered life (individual as well as communal) so will the incidence of Tuberculosis diminish.

- (1) Overcrowding.
- (2) Ventilation.
- (3) Sunshine.
- (4) Physical Fitness.
- (5) Cleanliness.

Overcrowding. Some people seem to treasure old furniture and other apparently useless articles far more than fresh air, thus using up valuable air space and adding to the evil of overcrowding, so common in private houses, common lodging houses and shops of all kinds. The licencing of common lodging houses is an important factor in the controlling of overcrowding but weekly inspections are found to be essential, because the average licensee thinks more in terms of profit than of health.

Ventilation. When originally constructed, houses are always adequately provided with means of ventilation, since the plans are carefully scrutinised by the Municipal Engineer and Health Officer. The desire for gain, however, overrules all sense of hygiene and it is usual to find ill-ventilated cubicles, constructed overnight, even in houses occupied by well educated people or rather by those who ought to know better. Some listen to reason, but the majority require the serving of official notices, in the case of others only prosecution will remove these obstacles to health.

Another all too common habit is that of keeping windows closed especially during the night, in spite of the knowledge that fresh air is necessary for healthy sleep.

Sunshine. There is no greater enemy to the germ of Tuberculosis than sunlight, and yet its exclusion from private dwelling places seems to be almost a fetish. The value of open spaces in houses is nullified by the erection of unsightly corrugated iron roofs, and the persistence with which these are replaced after official removal emphasises the failure of the occupants to recognise the value of such spaces.

Physical Fitness. To produce and maintain a well nourished, physically fit body the essentials are (a) a well balanced and adequate diet, (b) regular exercise in the open air, and (c) sufficient rest. If these were observed in the early years of life when Tuberculosis is most likely to obtain a footing, quite a number of the hospital cases of later years would be avoided. Too often, however, the efforts towards physical fitness are maintained only during school years. With the advent of adolescence, excesses start with the usual evil consequences, and later still healthy exercise has no part in the daily routine. As a health motto for all ages "Moderation in all things" commends itself for its brevity and truth.

Cleanliness. Cleanliness in its strictest sense is one of the greatest barriers to the spread of infection. Tuberculosis being almost ubiquitous is a constant source of danger to the uninfected who in their every day life come in contact with those already suffering from the disease. It is essential, therefore, that both should practise the most rigid cleanliness in their daily habits and mode of living.

It should be realised that one of the chief modes of entry of the casual germ of Tuberculosis is by the respiratory passages, the germ being conveyed by air from dried infected sputum. In this connection, therefore, attention must be directed to the all too common habit of spitting in public places. In many cases coughing and spitting have become habits—even the children acquire them—difficult certainly, like any other fixed habit, to eradicate, but surely it is not too much to ask that they should be rigidly controlled when it is realised that the health of the community is at stake.

By putting these ideals into practice it is not too much to expect that within a decade the incidence of Tuberculosis could be reduced to half its present rate.

14. ENTERIC FEVER.

44 cases were reported: 2 were Europeans, 34 Chinese, 5 Malays and 3 Indians.

27 cases were treated in Hospital: 12 died and 15 recovered.

17 remained at home: 9 died and 8 recovered.

The total number of cases is 27 less than the number reported in 1932.

15. CHICKEN-POX.

152 cases were reported, 128 of which were admitted to the Quarantine Camp.

Of the total 5 were Europeans, 3 Eurasians, 19 Chinese, 9 Malays, 115 Indians, and 1 Other Nationality.

33 cases were under ten years of age, 119 were over that age, their ages ranging from 10 months to 59 years.

As usual the Indians showed a distinct susceptibility to this disease, the number affected being quite out of proportion to the size of the community.

16. PUERPERAL FEVER..

7 cases were reported compared to 14 in 1932.

4 were Chinese, 2 Indians and 1 Other Nationality: 3 died and 4 recovered.

17. INFLUENZA.

Under Ordinance No. 157 (Quarantine and Prevention of Disease) this is classified as a dangerous infectious disease.

8 cases were reported, 1 was Eurasian, 2 were Chinese, 3 Malays and 2 Indians: 7 died and 1 recovered.

One case each was reported during the months of March, April, May, June, August and December, and 2 in October.

7 cases were notified by general practitioners and 1 by Hospital.

18. MEASLES.

This infectious disease is not notifiable under Ordinance No. 157 (Quarantine and Prevention of Disease). Each year some cases come under our attention, but the disease has never assumed epidemic proportions.

One case of Measles, an Indian, was reported in November. He was treated at the Quarantine Camp and recovered.

19. ERYSIPELAS.

6 cases were reported: 4 were Chinese and 2 Indians. 4 were treated in Hospital and recovered: 2 were treated at home and died.

20. WHOOPING COUGH.

One case was reported in May. He was treated at home and died.

21. MUMPS.

3 cases were reported: all were Indians. They were treated at the Quarantine Camp and recovered.

22. DIPHTHERIA.

15 deaths from Diphtheria is the largest number recorded in Penang, and 46 notifications are 17 more than in 1932. At first sight this might appear to be a somewhat alarming increase, but I believe it is nearer to a true record than has been obtained previously.

The increase in notifications is largely due to more thorough following up of contacts on the part of the health staff. Moreover, the co-operation of the Government Bacteriologist and the Medical Officer in charge of the Women's and Children's Clinic has resulted in a control of contacts and consequent lessening of the number of cases.

One of the 15 fatal cases was notified three days before death. The remaining 14 were notified practically at the same time as the death certificates were being issued. This points to a sad state of ignorance on the part of parents, for if the family doctor had been called earlier to these cases, there is no doubt that most of them would be still alive.

Many of the contacts, although not showing any of the signs or symptoms of Diphtheria, had the causal organism in their throats or noses and it was found to be very difficult to "negative" those in whom the tonsils were grossly enlarged and unhealthy.

Generally there is a marked need for more attention to the hygiene of the nose, throat and teeth. It should be a persistent daily duty of parents to see that even young children clean their teeth and keep the nose clear to ensure proper breathing. Such oral and nasal hygiene would reap a reward not only in decreasing the risk of infections such as Diphtheria, but also in abolishing many minor ailments commonly called "Colds" which are so frequently the fore-runners of more serious ills.

I show here the monthly incidence (Table XVII).

TABLE XVII.

Diphtheria 1933.

Month.	Cases reported.	Deaths.
January ...	2	—
February ...	—	—
March ...	5	2
April ...	3	3
May ...	4	—
June ...	19	2
July ...	4	3
August ...	—	—
September ...	—	—
October ...	2	—
November ...	4	3
December ...	3	2
Total ...	46	15

TABLE XVIII.

Diphtheria in Penang Municipality.

	Estimated population (mid-year)	Year	Total cases reported	Deaths
	98,381	1905	1	1
	99,400	1906	—	—
	100,429	1907	3	1
	101,469	1908	4	2
	102,520	1909	1	1
	103,582	1910	4	2
Census (10th March) ...	101,182	1911	2	1
	102,167	1912	3	3
	102,913	1913	3	2
	103,664	1914	1	1
	104,420	1915	2	2
	105,183	1916	—	—
	105,950	1917	4	4
	106,723	1918	2	2
	107,502	1919	4	3
	108,286	1920	1	1
Census (25th April) ...	123,187	1921	5	4
	125,834	1922	4	2
	128,300	1923	4	4
	130,800	1924	4	2
	133,373	1925	8	6
	136,000	1926	6	5
	138,635	1927	8	5
	141,348	1928	15	5
	144,114	1929	11	5
	146,935	1930	20	10
Census (2nd April) ...	149,964	1931	23	9
	152,908	1932	29	13
	156,014	1933	46	15

23. INFECTIOUS DISEASES HOSPITAL, PERAK ROAD.

134 patients, 48 contacts and one case for observation were admitted.

Details of disease and nationality are shown in Tables XIX and XX.

TABLE XIX.

Disease.	Remaining on 31-12-32.	Admitted	Total	Discharged	Transferred	Absconded	Remaining on 31-12-33.
Chicken-pox ...	1	128	129	126	—	1	2
Measles ...	—	1	1	1	—	—	—
Mumps ...	—	3	3	3	—	—	—
Syphilis ...	—	1	1	—	1*	—	—
Septic eruptions	—	1	1	1	—	—	—
Observation ...	—	1	1	1	—	—	—
Contacts ...	—	48	48	48	—	—	—
Total ...	1	183	184	180	1	1	2

*Transferred to General Hospital.

TABLE XX.

Nationality.	Remaining on 31-12-32.	Admitted	Total	Discharged	Transferred	Absconded	Remaining on 31-12-33.
Chinese ...	—	25	25	25	—	—	—
Malay ...	—	12	12	12	—	—	—
Indian ...	1	138	139	135	1	1	2
Others ...	—	8	8	8	—	—	—
Total ...	1	183	184	180	1	1	2

Notes.

1. The Camp was vacant from 11th August to 24th August, 15th September to 17th September, 19th October to 26th October and 5th December to 11th December inclusive.
2. 39 cases were admitted on personal application.

24. MARKETS.

We have one private general market, five public general markets, one public pig market and one public fish market.

The Municipal Engineer's Department is responsible for the sanitation of the public markets, and the steady improvement which is going on must be obvious to all.

25. THEATRES.

All theatres and cinemas were inspected once a week. The standard of sanitation remains good.

26. MEDICAL ATTENDANCES.

Medical advice or treatment was given to Municipal employees 5,186 times.

The total for 1932 was 4,011 and for 1931 was 3,814.

The number seen per month varied from 296 in February to 667 in September.

The numbers seen in the different departments were:—Engineer 3,683, Health 776, Electrical 95, Fire Brigade 77, Jinricksha 5, Water 432, Secretariat 107, and Veterinary 11.

27. SALE OF FOODS AND DRUGS ACT.

Most of the work of the Health Department done under the Sale of Foods and Drugs Act consists of supervising the production and sale of fresh milk. Much of the milk sold in Penang is brought from Province Wellesley, but before a licence is granted for the sale of this milk in the Municipality a report is obtained from the Health Officer, Province Wellesley, stating that the cows are kept in a sanitary cow-shed.

Within the Municipality there were 69 cattle-sheds and cow-houses licensed during the year and 190 milk sellers. Every milk seller is examined by the Deputy Health Officer before being licensed, and if any suspicion of Tuberculosis or any other infectious disease is found a licence is refused.

One milk inspector is employed in testing milk sold in the streets. He made 5,881 lactometer tests, while the Sanitary Inspectors on special afternoon inspections did 301 similar tests.

7 samples seemed to be below the standard but only 2 proved to have added water when analysed by the Deputy Government Analyst. These 2 were found to be adulterated with 19 and 34 parts per cent of added water. One of these vendors was prosecuted and convicted and fined \$125 and costs \$5-50. The other one could not be traced, so the summons was postponed.

Two vendors who had been summoned in 1929 and 1930 returned to Penang and were prosecuted on the old summonses and convicted, each being fined \$25 and costs \$5-50.

9 vendors were prosecuted on other charges and all were convicted: 2 for failing to carry their licences: 4 for failing to expose their badges: 2 for selling milk without licences, and 1 for using his milk can other than for fresh milk.

The total amount of fines imposed on milk vendors was \$213-00.

28. DESTRUCTION OF RATS.

As there is no record of the occurrence of plague in Penang in recent years, the destruction of rats is perhaps to be regarded as an economic rather than as a sanitary proceeding.

A special gang of seven coolies was detailed: they used direct slaughter after smoking out the runs, and to a less extent poison and traps.

By direct slaughter they accounted for 9,091 rats during the year.

29. WATER SUPPLY.

There was throughout the year an ample supply of good drinking water, the average daily consumption being 43 gallons per head, including water used for trade purposes and shipping.

30. FINANCIAL.

The total amount paid for by the Health Department for 1933 was \$148,591-08.

This includes the Quarantine Camp, the District Nurses Scheme, Vaccination, Anti-Mosquito Work, all pay and allowances and the Commissioners' donations to the Provident Fund of our staff.

The total receipts amounted to \$13,324-71 leaving \$135,266-37 as the cost of the department to the ratepayers.

This represents a rate of 2.175 per cent. or 5.22 pence in the pound sterling.

These figures are supplied by the Municipal Secretary.

The estimated population being 156,014, the total cost of the department for the year per head of population is about 87 cents or about two shillings sterling.

31. STAFF.

Dr. G. S. Glass who went on home leave in April, retired from the service on medical grounds at the expiration of his leave.

Dr. W. H. Brodie, Deputy Municipal Health Officer, was appointed Municipal Health Officer on 4th December.

I have to record with regret the death of Mr. J. S. Reutens, Chief Sanitary Inspector, on 26th January.

Mr. J. E. Miller, Chief Sanitary Inspector, arrived in Penang and took up his duties on 14th September.

Mr. V. E. Rozells, Sanitary Sub-Inspector, resigned on 11th June.

Mr. C. B. de Souza was appointed Sanitary Sub-Inspector on 12th June.

Mr. A. de Mello was appointed temporary Supervisor on 17th July.

I wish to record my appreciation of the excellent work of the staff of this department, especially in view of the sudden death of Mr. Reutens which rendered the post of Chief Sanitary Inspector vacant for most of the year.

I have the honour to be,

Gentlemen,

Your obedient servant,

W. H. BRODIE,

Municipal Health Officer.

Penang, 11th September, 1934.

To
THE MUNICIPAL HEALTH OFFICER,
Penang.

SIR,

I have the honour to submit the report of the work done by the staff during the year ending 31st December, 1933.

GENERAL SANITATION.

The staff made 37,577 inspections and 59,977 reinspections, in which 1,385 premises were found defective and 2,028 dirty.

The following table shows how the notices were dealt with during the year.

Notices.	Outstanding on 31-12-32	Unserved on 31-12-32	New notices issued 1933	New notices served 1933	Unserved on 31-12-33	Complied with in 1933	Work proceed- ing on 31-12-33	Cancelled in 1933	Brought for- ward to 1934
Nuisance	134	—	141	139	1	185	8	2	78
Lime Washing	7	—	198	198	—	184	—	3	18
Latrines	62	1	304	304	1	319	7	16	31
Drains	26	1	122	123	—	136	3	1	12
Filthy Premises	6	—	827	827	—	823	3	—	10
Common Lodging Houses	6	—	781	781	—	772	—	10	5
Trades	89	—	871	871	—	933	—	27	—
Bakeries	—	—	844	844	—	841	—	2	1
Bylaws	5	—	484	484	—	466	3	2	21
Wells	6	—	11	11	—	10	—	2	5
Partitions	18	—	286	286	—	266	9	2	36
Open Space	16	—	149	149	—	151	2	—	14
Mosquito Orders	38	3	248	250	1	236	33	1	51
Rats	1	—	136	136	—	134	—	1	2
Disinfection	1	—	380	380	—	372	—	9	—
Closing Order	5	—	28	28	—	29	1	—	4
Lodging House (Minor Offences Ordinance) ...	—	—	13	13	—	13	—	—	—
Total	420	5	5823	5824	3	5870	69	78	288

78 notices were cancelled for various reasons.

185 nuisance notices were complied with during the year. These dealt with 322 houses of which 180 were structurally altered to provide light and ventilation, 65 houses were generally repaired and 77 for other nuisance.

Complaints were received daily and these were all dealt with during the year.

WELLS.

11 notices under Section 247, Ordinance No. 135 (Municipal), were served and 6 brought forward from 1932. 10 were complied with: 10 wells were closed.

CEMETERIES.

The Sub-Inspector in charge visited the cemeteries 249 times.

EXHUMATIONS.

31 applications for exhumation of bodies were received, but only 30 bodies were exhumed under special licence.

PASSENGERS.

259 passengers arrived from infected ports and passed through this office as against 105 last year.

PLANS.

209 plans were sent in and examined in this office as against 397 last year.

PROSECUTIONS.

195 summonses were issued during the year	200 convictions 5 withdrawn 1 discharged
107 were brought forward from 1932	96 carried forward
<hr/> Total 302 <hr/>	<hr/> Total 302 <hr/>

29 Abatement of Nuisance, 12 Closing, 5 Ejectment and 10 Mandatory Orders were obtained.

The fines imposed by the Magistrates amounted to \$1,242-00 as against \$3,599-10 last year.

DISINFECTIONS.

410 houses were disinfected during the year for the following causes:—

Tuberculosis	209
Diarrhoea	82
Enteritis	29
Dysentery	13
Chicken-pox	33
Enteric Fever	23
Diphtheria	14
Puerperal Sepsis	3
Measles	2
Fleas	1
Erysipelas	1
	<hr/>
Total	410 <hr/>

The houses disinfected being distributed as follows:—

TUBERCULOSIS:—Burmah Road (10); Magazine Road (8); Chulia Street (7); Beach Street (6); Campbell Street, Rope Walk, Bridge Street, Penang Road, Noordin Street, West Jelutong, Macalister Road, Hutton Lane, Brick Kiln Road, Kimberley Street and Perak Road (5 each); Argyll Road and Presgrave Street (4 each); Dato Kramat Road, Gopeng Road, Muntri Street, Kuala Kangsar Road, Lorong Salamat, Tek Soon Street, Carnarvon Street, Prangin Road, Love Lane, East Jelutong, Kedah Road and Tye Sin Street (3 each); Scotland Road, Armenian Street, Sungei Pinang Road, Lorong Saratus Tahun, Perak Lane, Seang Tek Road, Chulia Lane, China Street, Malacca Street, Bishop Street, Kinta Lane, Carnarvon Lane, Seck Chuan Lane, Leith Street, Dato Koyah Road, Ceylon Lane, Jelutong Road, Market Lane and Gladstone Road (2 each); Sungei Ujong Road, Road, Kampong Deli, Barrack Road Kampong Java Bharu, Cannon Square, Hutton Lane, Siam Road, York Road, Green Lane, Burmah Lane, Che Em Lane, Kampong Java Lama, Trang Road, Cantonment Road, Kajang Road, Toh Aka Lane, Light Street, Hong Kong Street, Sri Bahari Road, Farquhar Street, Irving Road, Jahudi Road, Pahang Road, Patani Road, Abou Sittee Lane, Madras Lane, Bawasah Road, Bagan Jermal Road, Victoria Street, Pitt Street, Cintra Street, Ayer Etam Road, Jones Road, Klang Street, Macalister Lane, Chin Ho Square, Acheen Street, Kampong Malabar, College Lane, Kelawei Road and Ipoh Lane (1 each).

DIARRHOEA:—Bridge Street (9); West Jelutong (7); East Jelutong (6); Campbell Street (5); Prangin Road (4); Perak Road, Kimberley Street and Patani Road (3 each); Penang Road (2); McNair Street, Noordin Street, Dato Kramat Road, Carnarvon Street, Lumut Lane, Beach Street and Magazine Road (2 each); Sungei Ujong Road, Chulia Street, Armenian Street, Jelutong Road, Seck Chuan Lane, Perak Lane, Hutton Lane, Malay Street, Trang Road, Siam Road, Argyll Road, Trusan Road, Cannon Square, Presgrave Street, Noordin Street, Victoria Street, Cintra Street, Brick Kiln Road, College Lane, Seang Tek Road, Leith Street, Prangin Road Ghaut, Katz Street, Cantonment Road, Burmah Road and Gladstone Road (1 each).

ENTERITIS:—Noordin Street (4); Kuala Kangsar Road (3); Chulia Street, Hutton Lane and Perak Road (2 each); Armenian Street Ghaut, Gladstone Road, Presgrave Street, Market Street, Malay Street, Bridge Street, Caunter Hall, Trusan Road, Armenian Street, Stewart Lane, Magazine Road, Brick Kiln Road, Beach Street, Muntri Street, Patani Road and Waterfall Road (1 each).

DYSENTERY:—Magazine Road and Scotland Road (2 each); Rope Walk, Burmah Road, Transfer Road, Seang Tek Road, Campbell Street, Perlis Road, Argyll Road, Prangin Road and Kimberley Street (1 each).

PUERPERAL SEPTICAEMIA:—Bengal Lane, Hong Kong Street and Halfway Road (1 each).

CHICKEN-POX:—Patani Road (5); Dato Kramat Road, Muntri Street, Anson Road, Kinta Lane and Burmah Road (2 each); Sandilands Street, Lorong Salamat, Penang Street, Stewart Lane, Perak Lane, Seang Tek Road, Kampong Java Bharu, Hutton Lane, Kampong Java Lama, Perak Road, Gladstone Road, Penang Road, Sungei Pinang Road, Northam Road, Nagore Road and Argyll Road (1 each).

ENTERIC FEVER:—Magazine Road and Chulia Street (3 each); Noordin Street and Kuala Kangsar Road (2 each); Pitt Street, River Road, China Street, East Jelutong, Chow Thye Road, Jahudi Road, Muntri Street, Burmah Road, Bishop Street, Rope Walk, Acheen Street, Bridge Street and Maxwell Road (1 each).

DIPHTHERIA:—Bridge Street and Chulia Street (3 each); Burmah Road, Madras Lane, Malay Street, Gopeng Road, Khoo Cheow Teong Court, Kimberley Street, Magazine Road and Penang Road (1 each).

MEASLES:—Claimant Place (2).

FLEAS:—Beach Street (1).

ERYSIPELAS:—Noordin Street (1).

TRADES.

The fees collected during the year for trade licences amounted to \$8,499-60 as against \$9,009-40 the previous year, a decrease of \$509-80.

COMMON LODGING HOUSES.

805 common lodging houses were licensed during the year as against 906 in 1932, the fees collected amounted to \$1,556-60 as against \$1,711-10, a decrease of 101 houses and, in fees, \$154-50.

LODGING HOUSES UNDER THE MINOR OFFENCES ORDINANCE.

28 lodging houses were licensed under the Minor Offences Ordinance as against 30 in 1932.

MILK.

190 milk sellers were registered in 1933 as against 209 in 1932, a decrease of 19.

The Sanitary Inspectors spent an afternoon each month in testing milk by lactometer from the various milk sellers whom they met in different parts of the town.

301 samples were tested during the year by them and 5,881 by the Milk Inspector.

7 samples which seemed to be below the standard were purchased and sent for analysis of which 2 samples were found to contain 19% and 34% of added water respectively, and two samples were found adulterated with buffalo milk.

13 summonses were issued (2 for selling milk adulterated with added water and 11 for offences against the by-laws and regulations)

60 brought forward from 1932

—
Total 73
—

12 convictions were obtained

61 carried forward to 1934.

—
Total 73
—

Fines amounting to \$213 were imposed against \$265 in 1932, a decrease of \$52.

VACCINATION.

Our vaccinators made 3,229 primary and 245 secondary vaccinations. 1,200 tubes of lymph were used at a cost of \$300.

Private practitioners and public vaccinators made 1,023 primary vaccinations.

The Government vaccinator made 3,535 secondary vaccinations within Municipal limits.

RATS.

The gang of rat-catchers caught and destroyed 9,091 rats during the year by means of smoking, trapping and the use of poison.

ANTI-MOSQUITO WORKS.

Four anti-mosquito gangs worked during the year, cutting down vegetation, digging, levelling and clearing ditches in reserved roads within Municipal limits; they also carried out work at the request and expense of owners. All streams including tributaries were cleared whenever necessary and special attention was paid to the stream at the Chetty Temple during the Thaipusam Festival.

Five gangs of chokras, each under a supervisor, were allotted certain areas to go through regularly once a week, and they have carried out invaluable work in collecting and where possible burying tins, coconut shells and other receptacles, which would prove suitable places for the propagation of mosquitos.

The oiling gangs under supervisors regularly oiled all ditches, swamps and streams within Municipal limits and the Race Course, Kelawei Road, Bagan Jermal, Mount Erskine, Western Road, Waterfall Road and Scotland Road including the foothills to Kampong Bharu, Batu Gantong and foothills, Green Lane and foothills, Caunter Hall, Perak Road, East and West Jelutong and Jelutong Village, Bukit Dunbar, Perak Lane, Burmah, Anson, Larut, Gottieb, Sungei Pinang, River, Patani, Jelutong and Batu Lanchang Roads; 34,000 gallons of "Graham's" mosquito killer and 19,840 gallons of "Shell" anti-malarial mixture were used, the cost was \$13,548-80.

At the request of certain owners, oiling was done on private property, the income received from such sources being \$1,253-15.

STAFF.

I have to record with regret the death of Mr. J. S. Reutens, Chief Sanitary Inspector, on 26th January.

Mr. J. E. Miller, Chief Sanitary Inspector, arrived in Penang and took up his duties on 14th September.

Mr. V. E. Rozells, Sanitary Sub-Inspector, resigned on 11th June.

Mr. C. B. de Souza was appointed Sanitary Sub-Inspector on 12th June.

Mr. A. de Mello was appointed temporary Supervisor on 17th July.

For only a short period of the time under review, in this report, have I assumed the duties of Chief Sanitary Inspector, consequently, I cannot do more than record the bare facts of the year's work.

The Staff carried out their duties satisfactorily during the period that I have been in charge.

I have the honour to be,

Sir,

Your obedient servant,

JOHN E. MILLER,

Chief Sanitary Inspector.

Prosecutions.	Brought forward from 1932	Issued in 1933	Cases in Court	Convictions	Withdrawn	Discharged	Abatement of Nuisance Order	Closing Order	Ejectment Order	Prohibition Order	Mandatory Order	Total Orders Obtained	Fines		Costs.	
													\$	cts.	\$	cts.
Nuisance Notice	6	41	44	43	1	—	29	8	—	—	—	37	20	00	21	00
Abatement of Nuisance Order...	8	5	9	9	—	—	—	4	—	—	—	4	30	00	5	50
Latrines	2	9	11	11	—	—	—	—	—	—	5	5	12	50	5	50
Drains	—	3	3	3	—	—	—	—	—	—	2	2	12	50	1	50
Partitions	—	5	4	4	—	—	—	—	—	—	—	—	21	50	2	00
Trades	—	6	6	6	—	—	—	—	—	—	—	—	30	50	3	00
Open Space	—	2	2	2	—	—	—	—	—	—	1	1	7	00	1	00
Common Lodging Houses ...	7	16	22	21	1	—	—	—	—	—	—	—	244	50	10	50
Breach of C.L.H. By-laws ...	1	4	5	5	—	—	—	—	—	—	—	—	55	00	2	50
Breach of Bakery By-laws ...	14	46	50	48	2	—	—	—	—	—	—	—	414	50	24	00
Breach of Milk Regulations...	60	13	12	12	—	—	—	—	—	—	—	—	213	00	21	00
Failing to report birth ...	2	15	15	15	—	—	—	—	—	—	—	—	9	00	7	50
Breach of Pig By-laws ...	—	2	2	2	—	—	—	—	—	—	—	—	1	00	1	00
Breach of Cattleshed By-laws...	—	1	1	1	—	—	—	—	—	—	—	—	10	00	—	50
Lodging House (Minor Offences)	—	1	1	1	—	—	—	—	—	—	—	—	15	00	—	50
Mosquitoes	3	11	4	4	—	—	—	—	—	—	—	—	—	—	2	00
Sale of Food and Drugs ...	—	3	3	2	—	1	—	—	—	—	—	—	125	00	1	00
Closing Order	4	2	2	2	—	—	—	—	5	—	—	5	—	—	—	50
Breach of Conditions (Minor Offences)	—	1	1	1	—	—	—	—	—	—	—	—	10	00	—	50
Wells	—	5	5	5	—	—	—	—	—	—	2	2	—	—	2	50
Failing to report death ...	—	4	4	3	1	—	—	—	—	—	—	—	11	00	1	50
Total	107	195	206	200	5	1	29	12	5	—	10	56	1242	00	115	00

Licences issued in 1933.	No. 1932	Fees		No. 1933	Fees		No. In- crease.	Fees		No. De- crease.	Fees	
		\$	c.		\$	c.		\$	c.		\$	c.
Coal Depot ...	4	48	00	3	36	00	—	—	—	1	12	00
Charcoal Depot ...	33	198	00	29	174	00	—	—	—	4	24	00
Wood Depot ...	64	384	00	58	348	00	—	—	—	6	36	00
Candle Factory ...	13	104	00	11	88	00	—	—	—	2	16	00
Braziers, Foundries and Smithies	44	88	00	44	88	00	—	—	—	—	—	—
Atap, Kajang and Straw ...	33	99	00	26	78	00	—	—	—	7	21	00
Cattleshed and Cow-house ...	74	298	00	69	262	00	—	—	—	5	36	00
Pig Sties ...	578	1156	00	515	1030	00	—	—	—	63	126	00
Stables and Horses...	1	1	00	1	1	00	—	—	—	—	—	—
Sheep and Goats ...	14	35	40	15	53	60	1	18	20	—	—	—
Storing and Curing Hides ...	7	84	00	6	72	00	—	—	—	1	12	00
Soap Factory ...	16	128	00	16	128	00	—	—	—	—	—	—
Fish Storing and Curing ...	32	384	00	31	372	00	—	—	—	1	12	00
Rags, Bones and Feathers ...	6	72	00	6	72	00	—	—	—	—	—	—
Dyeing House ...	4	40	00	4	40	00	—	—	—	—	—	—
Drying Cloth ...	2	10	00	1	5	00	—	—	—	1	5	00
Tanneries ...	13	312	00	11	264	00	—	—	—	2	48	00
Blachan Factory ...	2	24	00	2	24	00	—	—	—	—	—	—
Sugar Factory ...	6	36	00	5	30	00	—	—	—	1	6	00
Pepper Washing Factory ...	1	10	00	—	—	—	—	—	—	1	10	00
Pottery Making ...	2	4	00	2	4	00	—	—	—	—	—	—
Market Gardens ...	93	—	—	86	—	—	—	—	—	7	—	—
Milksellers ...	209	209	00	190	190	00	—	—	—	19	19	00
Bakeshops ...	20	100	00	19	95	00	—	—	—	1	5	00
Cookshops ...	191	955	00	171	855	00	—	—	—	20	100	00
Eatingshops ...	798	3990	00	797	3985	00	—	—	—	1	5	00
Fresh Fish and Meat ...	48	240	00	41	205	00	—	—	—	7	35	00
Lodging Houses (Minor Offences Ordinance) ...	30	30	00	28	28	00	—	—	—	2	2	00
Common Lodging Houses ...	906	1711	10	805	1556	60	—	—	—	101	154	50
Total ...	3244	10750	50	2992	10084	20	1	18	20	253	684	50